

REMARKS

Claims 1, 5, and 11 have been amended. Support for these amendments may be found, for example, in paragraphs [0028] and [0030] of applicants' specification.

New claims 21 and 22 have been added.

Upon entry of this amendment, claims 1-3, 5-14, and 16-22 are pending in this application.

Rejections under 35 U.S.C. §103(a)

Applicants respectfully request withdrawal of the rejection of claims 1-3, 5-14, and 16-20 under 35 U.S.C. §103(a) over (1) U.S. Patent No. 5,549,757 to Morano (Morano) and (2) U.S. Patent No. 3,642,535 to Graham et al. (Graham et al.).

Claim 1

Independent claim 1, as amended, requires:

- (i) feeding granulated sucrose and a solution of corn syrup to a twin screw-fed mixer comprising a feed end, a discharge end, and one or more flights on the screws that cause forward pressure while permitting back flow, wherein the granulated sucrose and corn syrup solution are back-mixed to provide a uniform wet mixture of the sucrose coated with the corn syrup;
- (ii) discharging the wet mixture to a size reduction comminutor to break up lumps;
- (iii) feeding the comminuted wet mixture to a drier to produce a dried mixture;
- (iv) feeding the dried mixture to a sieve; and
- (v) recovering granules of sucrose bound together by corn syrup solids.

A goal of the claimed process is preparing a granular sugar ingredient suitable for preparing compressed tablet confections and, more particularly, compressed tablet confections having a higher initial strength as compared to conventional compressed tablet confections. In this manner, the compressed tablets prepared in accordance with the present invention are more resistant to breaking and chipping during handling and/or packaging. It has been discovered that preparing a granular sugar ingredient in the manner described in claim 1 provides granular sugar ingredients that may be used

to prepare compressed tablet confections that exhibit increased initial hardness as compared to compressed tablet confections including granulated sugar ingredients prepared by conventional methods. In particular, operation of the method in the manner described in claim 1 (i.e., utilizing a twin-screw fed mixer comprising a feed end, a discharge end, and one or more flights on the screws that cause forward pressure while permitting back flow, and wherein the granulated sucrose and corn syrup solution are back-mixed to provide a uniform wet mixture of the sucrose coated with the corn syrup) subjects the granulated sucrose/corn syrup solution to conditions that promote formation of granular sugar ingredients suitable for preparing improved compressed tablet confections. For example, mixing under the conditions described in claim 1 promotes uniform coating of the sucrose particles by the water available in the corn syrup prior to the water of the corn syrup solution dissolving the sucrose particles. See, for example, paragraph [0030] of applicants' specification.

Morano

Morano describes processes for recrystallizing sugar that include mixing powdered sugar and an adjuvant such as invert sugar or molasses. Morano generally describes feeding the sugar blend to an "extruding means;" desirably, the mixing is performed by a cooker-extruder. Morano column 5, lines 23-34. Each of the preparation methods described in the Examples of Morano utilize a single-screw extruder. Column 12, line 20 to column 19, line 13 of Morano. The pending claims require a twin screw-fed mixer and mixing the granulated sucrose and corn syrup solution under conditions that provide back-mixing of the granulated sucrose and corn syrup solution to provide a uniform wet mixture of the sucrose coated with the corn syrup. Accordingly, the processes of the pending claims and the process described in Morano are manifestly different. In addition, Morano expressly states a preference for a single screw extruder over a twin-screw extruder:

"A single screw-extruder is preferred over a twin-screw extruder because of its significantly lower capital cost without any discernible processing drawbacks." Column 8, lines 4-6 of Morano.

Accordingly, Morano would not suggest to one skilled in the art the desirability of utilizing a twin screw-fed mixer generally, or more specifically under the conditions required in the claims presented herewith.

The purpose of the claimed process and the purpose of the process of Morano are also vastly different. The process of Morano is directed to recrystallizing sugar and the granular products of Morano are described as suitable for fondants and exhibiting desirable texture and mouthfeel when dispersed in water. Morano states that the aggregates produced by their method can advantageously be pulverized without caking, but the reference does not describe or suggest the use of the aggregates prepared by the described method in compressed tablet confections. See Morano column 11, lines 37-40 and column 12, lines 9-15. Thus, the method of Morano does not implicate, let alone address, any issues addressed by the process of claim 1 associated with compressed tablets (e.g., initial tablet hardness). Accordingly, Morano would not suggest to one skilled in the art, or provide any reason to modify its process for recrystallizing sugar to provide an improved process for preparing granular sugar ingredients suitable for use in compressed tablet confections as defined in claim 1, as amended.

Based on the foregoing, it is respectfully submitted that claims 1-3 and 19 are patentable over the disclosure of Morano.

Independent claim 1 further requires that the corn syrup is employed in an amount of from about 3 to 8% by weight and that the corn syrup solution has a solids content of from about 55 to 75% by weight. However, even if the moisture content of the sugar/syrup blend of Morano were adjusted as proposed at page 3 of the Office action, it is respectfully submitted that claims 1-3 and 19 are nonetheless patentable over Morano for the above-noted reasons.

Graham et al.

Graham et al. describe a tableting sugar prepared from a mixture of sucrose and maltodextrin. The sucrose/maltodextrin syrup is generally concentrated to a temperature of from about 120°C to about 130°C and a solids content in the range of

from about 91 to about 97 percent by weight. The concentrated syrup of the desired moisture content is subjected to impact heating within a crystallization zone through which a gas is flowed to prevent an increase in the temperature of the syrup and the crystallized sugar product, and to carry off water vapor produced within the crystallization zone. Aggregates or agglomerates of fondant-sized sucrose crystals are formed in the crystallization zone by the impact beating of the sucrose / maltodextrin syrup. That is, the aggregates or agglomerates of Graham may be formed utilizing a crystallizer. Graham et al. column 3, line 68 to column 4, line 6. The pending claims require utilizing a twin screw-fed mixer to provide back-mixed granulated sucrose and corn syrup solution to provide a uniform wet mixture of the sucrose coated with the corn syrup. Accordingly, the process of claim 1 and the process described in Morano are manifestly different. And nowhere does the reference disclose or suggest operation in a different manner to prepare the aggregates described therein.

It is respectfully submitted that utilizing a screw-fed mixer and a drier represent affirmative process limitations, and not simply apparatus limitations as contended by the Office at page 4 of the Office action. In addition, claim 1 has been amended to require use of a twin screw-fed mixer that provides back-mixing of the granulated sucrose and corn syrup solution. As noted, operation of the process in this manner provides granular sugar ingredients that may be utilized to prepare improved compressed tablet confections.

The Graham et al. process utilizes maltodextrin. Contrary to the assertion at page 4 of the Office action, it is respectfully submitted that one skilled in the art would not consider the description of maltodextrins by Graham et al., including the passage cited in the Office action (column 2, lines 61-63), as describing corn syrup required in claim 1. Graham et al. clearly state that the maltodextrins employed in the invention are characterized by a dextrose equivalent (DE) value of about or below 19. Graham et al. refer to corn syrup solids as having a DE in excess of 19, but do not describe employing corn syrup solids in their method. Applicants' specification describes corn syrup suitable for utilizing in the present processes as being standard grade (e.g., characterized by a DE of 42).

In addition, maltodextrin and corn syrup are understood by those skilled in the art to have different properties and behave differently during processing. Maltodextrin is generally more prone to absorbing moisture as compared to corn syrup. Excess moisture content during preparation of tablet confections is undesired for a variety of reasons. For example, excess moisture may inhibit, and even prevent formation of a free-flowing granular sugar ingredient (i.e., excess moisture may promote formation of clumps). Excess moisture may also inhibit formation of compressed tablets exhibiting sufficient hardness. In addition, excess moisture content may degrade flavors present in the confections. Furthermore, corn syrup is generally understood to be more readily crystallized as compared to maltodextrin, an advantage when preparing compressed tablet confections desired to exhibit suitable hardness.

Accordingly, in addition to failing to disclose or suggest utilizing a twin screw-fed mixer as required in claim 1, it is respectfully submitted that Graham et al. fail to disclose or suggest the use of corn syrup as required in claim 1.

Based on the foregoing, it is respectfully submitted that claims 1-3 and 19 are patentable over Graham et al.

Claim 5

Like claim 1, independent claim 5, as amended, requires feeding granulated sucrose and a solution of corn syrup to a twin screw-fed mixer comprising a feed end, a discharge end, and one or more flights on the screws that cause forward pressure while permitting back flow, wherein the granulated sucrose and corn syrup solution are back-mixed to provide a uniform wet mixture of the sucrose coated with the corn syrup.

Accordingly, claim 5 and claims 6-10 and 21 depending therefrom are submitted as patentable over the cited references for the reasons set forth above regarding claim 1.

Claim 5 also requires discharging the wet mixture to a size reduction comminutor to break up lumps; feeding the comminuted wet mixture to a drier to produce a dried mixture; and recovering granules of sucrose bound together by corn syrup solids. It is further required that from 40 to 80% of the recovered granules of claim 5 will pass

through a 10 mesh screen and be retained on a 60 mesh screen. Neither cited reference reports or suggests recovering granules satisfying this limitation. However, even if the recrystallized sugar of Morano or the aggregates of Graham et al. did satisfy this limitation, it is respectfully submitted that claims 5-10 and 21 are patentable over the cited references for the above-noted reasons regarding claim 1.

Claim 11

Independent claim 11 is directed to a process for the preparation of a compressed confection and requires:

- (a) preparing a granulated sugar ingredient;
- (b) mixing the granulated sugar ingredient with flavor; and
- (c) compressing the granulated sugar ingredient and flavor to form a

compressed candy.

As in claims 1 and 5, the granulated sugar ingredient is prepared by a process comprising feeding granulated sucrose and a solution of corn syrup to a twin screw-fed mixer comprising a feed end, a discharge end, and one or more flights on the screws that cause forward pressure while permitting back flow, wherein the granulated sucrose and corn syrup solution are back-mixed to provide a uniform wet mixture of the sucrose coated with the corn syrup.

Accordingly, it is respectfully submitted that claim 11 and claims 12-14, 16-18, 20, and 22 depending directly or indirectly therefrom are patentable over the cited references for the reasons set forth above regarding claim 1, and based on the additional limitations appearing therein.

In view of the above, favorable reconsideration and allowance of all pending claims are respectfully solicited.

Respectfully submitted,

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